

WHAT IS CLAIMED IS:

- 1    1.    A method of automatically defining a spatial arrangement of  
2       structural components relative to each other within an  
3       installation space, using a data processing system  
4       including a configuration tool and a drawing module,  
5       comprising the steps:  
6       a)    inputting general parameters of a selected  
         installation space into said configuration tool;  
7       b)    storing first data that define a space-specific  
8       geometry of said selected installation space, and then  
9       loading said first data and displaying said first data  
10       in said drawing module;  
11       c)    storing second data that respectively geometrically  
12       define structural components that are to be arranged  
13       in said selected installation space;  
14       d)    providing said second data together with said first  
15       data into said drawing module;  
16       e)    providing a rule set that defines at least customer-  
17       specific requirements of a customer for whom said  
18       structural components are to be arranged in said  
19       installation space; and  
20       f)    processing said first data and said second data  
21       together according to said rule set in said  
22       configuration tool so as to automatically define a  
23       spatial arrangement of said structural components  
24       relative to each other within said installation space.  
25

1     **2.**    The method according to claim 1, wherein said step f)  
2            further optimizes a configuration of said structural  
3            components relative to each other within said installation  
4            space with respect to at least one of a functional position  
5            of each one of said structural components and a quantity of  
6            said structural components arranged in said installation  
7            space.

1     **3.**    The method according to claim 1, wherein said step c)  
2            comprises carrying out a functional and data analysis so as  
3            to mathematically describe said structural components and  
4            to mathematically represent said structural components  
5            according to position rules.

1     **4.**    The method according to claim 1, wherein said data  
2            processing system further comprises a document generating  
3            tool including a processing program, and said method  
4            further comprises, using said generating tool, generating  
5            production documents including at least one of drawings,  
6            parts lists, materials lists, video preliminary  
7            examinations, plotter plans, installation plans, production  
8            plans, and production contracts, corresponding to said  
9            spatial arrangement defined in said step f).

1     **5.**    The method according to claim 4, wherein said production  
2            documents include said drawings, and further comprising  
3            transferring drawing data representing said drawings via  
4            a plot script from said document generating tool to a

computer aided design (CAD) output system that outputs said drawings.

6. The method according to claim 4, further comprising transferring said production documents via an interface from said document generating tool to a technical administrative system.

7. The method according to claim 6, wherein said technical administrative system comprises a production planning system.

8. The method according to claim 1, wherein said selected installation space comprises at least one partial space within an aircraft cabin of a selected aircraft type.

9. The method according to claim 8, wherein said at least one partial space within said aircraft cabin comprises a service channel in said aircraft cabin, said structural components to be installed in said service channel include any one or more of passenger service units, lights, air vents, loudspeakers, oxygen supply units, video monitors, informational displays, and control switches.

10. The method according to claim 9, further comprising providing third data that respectively define additional cabin outfitting components including one or more of galleys, toilets, storage cabinets, passenger seats and baggage compartments arranged according to a customer-

6 specified cabin layout, and wherein said step f) further  
7 includes processing said third data together with said  
8 first data and said second data according to said rule set  
9 to define said spatial arrangement of said structural  
10 components.

1 11. The method according to claim 10, further comprising fourth  
2 data that respectively define surrounding components  
3 including one or more of cabin dividers, baggage  
4 compartments, video monitors, and display screens of which  
5 the arrangement will limit the possible range of variants  
6 of said spatial arrangement, and wherein said step f)  
7 further includes processing said fourth data together with  
8 said first data, said second data and said third data  
9 according to said rule set to define said spatial  
10 arrangement of said structural components.

1 12. The method according to claim 11, wherein said surrounding  
2 components include said baggage compartments, which further  
3 serve as carriers for equipment and for electrical  
4 interfaces of said service channel.

1 13. The method according to claim 12, wherein said fourth data  
2 define said baggage compartments as a row of successive  
3 ones of said baggage compartments, and wherein said  
4 processing in said step f) automatically adapts said fourth  
5 data defining said row of baggage compartments according to  
6 said rule set.

1    **14.**   The method according to claim 10, wherein said providing of  
2           said third data comprises selecting and reading out said  
3           third data from a cabin outfitting component reference  
4           database in which said third data are stored among data  
5           defining plural different available cabin outfitting  
6           components.

1    **15.**   The method according to claim 9, wherein said step c)  
2           comprises storing said second data in a component reference  
3           database that contains data defining plural different  
4           available structural components, and wherein said step d)  
5           of providing said second data comprises selecting and  
6           reading out said second data from said component reference  
7           database.

1    **16.**   The method according to claim 9, wherein said at least one  
2           partial space within said aircraft cabin further comprises  
3           another space other than said service channel in said  
4           aircraft cabin, and wherein said steps are carried out also  
5           for defining a spatial arrangement of other components  
6           within said another space.

1    **17.**   The method according to claim 8, wherein said step b) of  
2           storing and loading said first data comprises loading a  
3           data set defining a customer-approved preliminary cabin  
4           layout into said data processing system through a data  
5           input interface.

1 18. The method according to claim 1, wherein said step c)  
2 comprises storing said second data in at least one  
3 reference database that contains parametric data defining  
4 various different structural components.

1 19. The method according to claim 1, wherein said installation  
2 space is a space within a transport vehicle other than an  
3 aircraft.

1 20. The method according to claim 1, wherein said installation  
2 space is an industrial plant, and said arrangement of  
3 structural components forms assembled equipment in said  
4 plant.